This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claim 1 (Previously presented): A method for concealing data within a digital signal, the method comprising:

receiving a first data pattern of discrete values which are bits of a watermark and a second data pattern of discrete values which are bits of a covert message;

imposing a discrete value of the second data pattern over one or more discrete values of the first data pattern to generate a third data pattern, wherein the imposing is carried out by performing a Boolean operation with a discrete value of the second data pattern and multiple discrete values of the first data pattern;

processing the digital data signal into a series of bitframes, wherein each bitframe includes a set of frames, and wherein each frame includes a set of blocks; and

encoding the third data pattern into the digital signal, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe, and wherein a same bit of the covert message is encoded in each frame of the subject bitframe.

Claims 2-3 (Canceled)

Claim 4 (Previously presented): A method as recited in claim 1, wherein the Boolean operation is XOR.

Claim 5 (Previously presented): A method as recited in claim 1, wherein

a pattern of discrete values may be encoded into the digital signal in one of multiple discrete states;

the imposing comprises encoding one or more multiple values of the first data pattern into the digital signal into a state that indicates a single discrete value of the second data pattern.

Claim 6 (Previously presented): A method as recited in claim 1, wherein the digital signal is selected from a group consisting of a digital audio signal, a digital video signal, a digital image signal, and a digital multimedia signal.

Claim 7 (Previously presented): A method as recited in claim 1, wherein the different bit of the watermark which is encoded in a respective frame of the subject bitframe, is repeated in each block of the respective frame.

Claim 8 (Previously presented): A computer having a computer-readable medium as recited in claim 18.

Claim 9 (Previously presented): A method for revealing a covert data pattern of discrete values from an encoded data pattern of discrete values in a digital signal, the method comprising:

receiving a digital signal, the digital signal being segmented into a series of bitframes which each include a set of frames, the digital signal having an encoded data pattern of discrete values representing a first data pattern of discrete values which are bits of a watermark, a different bit of the watermark encoded in each frame of at least one subject bitframe, and a covert data pattern of discrete values which are bits of a covert message, a same bit of the covert message encoded in each frame of the subject bitframe; and

extracting a discrete value of the covert data pattern from a plurality of values of the encoded data pattern, wherein the extracting is carried out by decoding a single discrete value of the covert data pattern from the digital signal based upon a state of a multiple discrete values of the encoded data pattern.

Claim 10-11 (Canceled)

Claim 12 (Previously presented): A method as recited in claim 9, wherein the digital signal is selected from a group consisting of a digital audio signal, a digital video signal, a digital image signal, and a digital multimedia signal.

Claim 13 (Previously presented): A computer having a computer-readable medium as recited in claim 19.

Claim 14 (Currently amended):   A method for encoding a watermark with a covert message into a digital audio signal, the method comprising:

encoding multiple binary bits of the watermark into frames of at least one subject bitframe of the digital audio signal, a different one of the multiple binary bits encoded into each of the frames, the multiple binary bits encoded into the digital audio signal in multiple states; and

encoding a binary bit of the covert message over all the frames of the subject bitframe of the digital audio signal, the binary bit of the covert message indicating a single discrete value of the covert message.

Claim 15 (Currently amended):   A method as recited in claim 14, wherein the multiple states are positive or negative modifications to magnitudes of one or more subbands in the frequency spectrum of a sample of the digital audio signal.

Claim 16 (Currently amended):   A method for imposing a covert message into a watermark, the method comprising:

generating multiple watermarks;

assigning each of the multiple watermarks to each of [[the]] possible discrete values for at least a portion of the covert message;

selecting a watermark that corresponds to an actual discrete value of at least a specific portion of the covert message;

without encoding any portion of the covert message itself into a digital signal, encoding the selected watermark into the digital signal.

Claim 17 (Previously presented): A method as recited in claim 16, wherein

size of all portions of the covert message is N bits long;

number of the multiple watermarks is 2^N.

Claim 18 (Previously presented): A computer-readable medium having computer-executable instructions that, when executed by a computer, perform a method for concealing data within a digital signal, the method comprising:

receiving a first data pattern of discrete values which are bits of a watermark and a second data pattern of discrete values which are bits of a covert message;

imposing a discrete value of the second data pattern over one or more discrete values of the first data pattern to generate a third data pattern, wherein the imposing is carried out by performing a Boolean operation with a discrete value of the second data pattern and multiple discrete values of the first data pattern;

processing the digital signal into a series of bitframes, wherein each bitframe includes a set of frames, and wherein each frame includes a set of blocks; and

encoding the third data pattern into the digital signal, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe, and wherein a same bit of the covert message is encoded in each frame of the subject bitframe.

Claim 19 (Previously presented): A computer-readable medium having computer-executable instructions that, when executed by a computer, perform a method for revealing a covert data pattern of discrete values from an encoded data pattern of discrete values in a digital signal, the method comprising:

receiving a digital signal, the digital signal being segmented into a series of bitframes which each include a set of frames, the digital signal having an encoded data pattern of discrete values representing a first data pattern of discrete values which are bits of a watermark, a different bit of the watermark encoded in each frame of at least one subject bitframe, and a covert data pattern of discrete values which are bits of a covert message, a same bit of the covert message encoded in each frame of the subject bitframe; and

extracting a discrete value of the covert data pattern from a plurality of values of the encoded data pattern, wherein the extracting is carried out by decoding a single discrete value of the covert data pattern from the digital signal based upon a state of a multiple discrete values of the encoded data pattern.

Claim 20 (Previously presented):   An apparatus comprising:

a processor;

a covert-channel-encoder executable on the processor to:

receive a first data pattern of discrete values which are bits of a watermark and a second data pattern of discrete values which are bits of a covert message;

impose a discrete value of the second data pattern over one or more discrete values of the first data pattern to generate a third data pattern, wherein the imposition is carried out by performing a Boolean operation with a discrete value of the second data pattern and multiple discrete values of the first data pattern;

process the digital signal into a series of bitframes, wherein each bitframe includes a set of frames, and wherein each frame includes a set of blocks; and

encode the third data pattern into the digital signal, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe, and wherein a same bit of the covert message is encoded in each frame of the subject bitframe.

Claim 21 (Previously presented): An apparatus comprising:

a processor;

a covert-channel-decoder executable on the processor to:

receive a digital signal, the signal having an a watermark encoded therein, the watermark being an encoded data pattern of discrete values is encoded into the signal in one of multiple discrete states, the encoded data pattern representing multiple data patterns comprising an original watermark data pattern and a covert data pattern;

extract a discrete value of the covert data pattern from a plurality of values of the encoded data pattern, wherein the extraction is carried out decoding a single discrete value of the covert data pattern from the digital signal based upon a state of a multiple discrete values of the encoded data pattern.

Claim 22 (Previously presented): A data encoding system for concealing data within a digital signal, the system comprising:

a receiver for receiving a first data pattern of discrete values which are bits of a watermark and a second data pattern of discrete values which are bits of a covert message;

an imposer coupled to such receiver, the imposer for imposing a discrete value of the second data pattern over one or more discrete values of the first data pattern to generate a third data pattern, wherein the imposer carries out its imposing by performing a Boolean operation with a discrete value of the second data pattern and multiple discrete values of the first data pattern;

an encoder coupled to the receiver and the imposer, the encoder for inserting within the digital signal one or more values of the third data pattern which are results of the imposer's imposing a discrete value of the second data pattern over one or more values of the first data pattern, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe, and wherein a same bit of the covert message is encoded in each frame of the subject bitframe.

Claim 23 (Canceled)

Claim 24 (Previously presented): A marked signal embodied on a computer-readable medium, the marked signal having an encoded data channel therein, wherein such encoded data channel has a covert data channel imposed therein, the marked signal generated in accordance with the following acts:

receiving an original watermark data pattern of discrete values which are bits of a watermark and a covert data pattern of discrete values which are bits of a covert message;

imposing a discrete value of the covert data pattern over one or more discrete values of the original watermark data pattern to generate a third data pattern, wherein the imposing carries out its imposing by performing a Boolean operation with a discrete value of the covert data pattern and multiple discrete values of the watermark data pattern;

processing a digital signal into a series of bitframes, wherein each bitframe includes a set of frames, and wherein each frame includes a set of blocks; and

encoding the third data pattern into the digital signal to generate the marked signal, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe, and wherein a same bit of the covert message is encoded in each frame of the subject bitframe.

Claim 25 (Canceled)

Claim 26 (Previously presented): A marked signal as recited in claim 24, wherein the Boolean operation is XOR.

Claim 27 (Previously presented): A marked signal as recited in claim 24, wherein

a pattern of discrete values may be encoded into the signal in one of multiple discrete states;

the imposing comprises encoding one or more multiple values of the first watermark data pattern into the digital signal into a state that indicates a single discrete value of the second covert data pattern.

Claim 28 (Previously presented): A marked signal as recited in claim 24, wherein the marked signal is selected from a group consisting of a digital audio signal, a digital video signal, a digital image signal, and a digital multimedia signal.

Claims 29-34 (Canceled)

Claim 35 (Previously presented): A method for concealing data within a digital signal, the method comprising:

receiving a first data pattern of discrete values which are bits of a watermark and a second data pattern of discrete values which are bits of a covert message;

imposing a single discrete value of the second data pattern on a plurality of values of the first data pattern, wherein the imposing encodes a third data pattern into the digital signal, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe of the digital signal, wherein a same bit of the covert message is encoded in each frame of the subject bitframe of the digital signal.

Claim 36 (Previously presented): A method as recited in claim 35, wherein the imposing comprises performing a Boolean operation with a discrete value of the second data pattern and a plurality of values of the first data pattern.

Claim 37 (Previously presented): A method as recited in claim 35, wherein the imposing comprises XORing a discrete value of the second data pattern with a plurality of values of the first data pattern.

Claim 38 (Previously presented): A method as recited in claim 35, wherein a pattern of discrete values may be encoded into the digital signal in one of multiple discrete states;

the imposing comprises encoding a plurality of values of the first data pattern into the digital signal into a state that indicates a single discrete value of the second data pattern.

Claim 39 (Previously presented): A method as recited in claim 35, wherein the digital signal is selected from a group consisting of a digital audio signal, a digital video signal, a digital image signal, and a digital multimedia signal.

Claim 40 (Previously presented): A method as recited in claim 35, wherein the first data pattern is a watermark.

Claim 41 (Previously presented): A computer-readable medium having computer-executable instructions that, when executed by a computer, performs the method as recited in claim 35.